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ABSTRACT

Previous research has shown a similar starting time for early combinations of words and play actions in children and has suggested that similar cognitive processes underlie the transition to combining activities in language, symbolic play, and manipulative play. A study was undertaken to investigate combining activities in these three domains and to look for correlations among the activities in a sample of children who were approximately two years old. The 30 subjects engaged in symbolic play tasks that involved a set of modelled scenarios such as hugging a toy dog, putting a leash on it, and making it eat from a bowl. Each scene was modelled with both appropriate and inappropriate objects. They also performed manipulative play tasks that included a modelled action sequence of banging a plastic ring with a block, spinning the ring, and then stacking it on a dowel. For both tasks, the dependent measure of play combinations was the number of actions the child could string together without interruption. The dependent measure for language was mean length of utterance (MLU). No correlation was found between MLU and combining abilities in symbolic play with appropriate objects. However, a positive correlation was found between symbolic play combinations with inappropriate objects and MLU. A negative correlation was found between manipulative play combinations and MLU. (FL)

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EARLY COMBINATIONS OF WORDS AND ACTIONS

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Presented at Rocky Mountain Psychological Assn., April 1981, Denver

ABSTRACT

Previous work (e.g., Fenson and Ramsay, 1980; McCall, Parke & Kavanaugh, 1976) has noted a similar onset time for early combinations of words and play actions, and suggested that similar cognitive capacities underlie the transition to combinatorial activity in language, symbolic play, and manipulative play. The present study assesses combinatorial activity in these three domains and looks for correlations of these abilities in the same sample of 19 to 21½ month-old children.

Symbolic play tasks involve a set of medelled scenarios such as hugging a toy dog, putting a leash on it, and making it eat from a bowl. Each scene is modelled with both appropriate and inappropriate objects. Manipulative play tasks include a modelled action sequence of banging a plastic ring with a block, spinning the ring, then stacking it on a dowel. For both symbolic and manipulative play tasks the dependent measure of play combinations is the number of different actions the child can string together without interruption. The dependent measure for language is Mean Length of Utterance.

Preliminary results suggest a positive correlation between symbolic play combinations with inappropriate objects and MLU, and a negative correlation between manipulative play combinations and MLU.

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By the time they are two years old, most children have passed two important milestones in language development: their first words, somewhere around the end of the first year; and their first sentences, usually between 18 and 24 months. One of the great mysteries of child language study is why the one-word stage lasts so long: an average of eight long months at a time when development is occurring very rapidly.

The mystery deepens when it becomes apparent that many of the components of sentences are already present in the child's use of one-word utterances. One of the things that make sentences special is that they are about relationships between objects, events, and people. There is evidence that toward the end of the one-word stage, children begin to use their one-word utterances in a way which suggests that they understand that words can be used to express relationships: the child may point to Daddy's jogging shoes and say "Daddy". So it doesn't appear to be a lack of relational meanings that prevents the child from using sentences. Nor does it appear to be a limit on the amount of phonological material or syllables that the child can produce: children of this age often produce long utterances that from an adult point of view are whole sentneces, e.g., "Iwant it", "no like it". The child seems, however, to use these as if they were a single unit. The problem seems to be taking two different elements that exist as separate lexical units and combining them into one package.

Since many components of sentences are already present in the

child's language before the transition to multi-word speech, we might look outside of language for capacities which enable the child to make the combinatorial leap. It so happens that at about the same time as the child is beginning to put together her first sentences, combinatorial activities are also beginning to take place in other domains, such as symbolic play and non-semantic manipulative play.

Among others, Fenson and Ramsay (1980) have noted an increase between 18 and 24 months of multi-scheme combinations in symbolic play. The child begins to put together symbolic actions such as hugging a doll and then putting it to bed, whereas before these schemes tended to occur singly.

Such combinatorial advances occur also in activities without semantic or meaningful content. McCall, Parke & Kavanaugh (1976) modelled complex action sequences, such as putting a ball into a nesting cup, covering it with another nesting cup, then shaking this combination, for children between 1 and 3 years of age. Again, between 18 and 24 months, children began to be able to imitate these complex action sequences.

These observations suggest that some general cognitive capacity which allow the child to make combinations of different actions begins to function toward the end of the second year and is manifested in language, symbolic play, and non-semantic activity. But just because things happen at the same time in development does not necessarily mean that they involve similar mechanisms or share underlying structures. For example, children begin walking and talking at about the same time, but these abilities are not related in the same sample of children. Early walkers are not necessarily early talkers. In order to find out if there is a relationship between these

different types of combinatorial activity, we need evidence about the relationship between combinations in language, symbolic play, and non-semantic actions from the same sample of children.

In my dissertation work, I am exploring these relationships in a sample of 30 children between 19 and 21½ months. The target language variables include Mean Length of Utterances, calculated according to Brown's (1973) rules on a sample of 50 utterances.

The symbolic play tasks involve a set of modelled scenarios such as hugging a toy dog, putting a leash on it, and making it eat from a bowl. These scenes are acted out with both appropriate objects (e.g., toy dog) and inappropriate objects (e.g., a flashlight in the doggie scene) because in previous work in our lab we have found that symbolic play with inappropriate objects is more closely related to language than play with appropriate objects. The dependent measure of play combinations is the number of different symbolic gestures the child strings together without interruption. For example, if the child drank from the cup and then wiped her mouth, then looked around the room or engaged in social interaction, she would get a score of 2.

The non-semantic action task involves a modelled action sequence ob banging a plastic ring with a block, spinning the ring, then stacking it on a dowel stick. The child's behavior is scored the same way as in the symbolic play tasks.

Below are preliminary results, based on a subsample of 12 children. Since these are preliminary and of an exploratory nature, alpha of .10 was used.

	MLU	APC	IPC	NSC
Mean Length of Utterance	1.0	r=.00 p=1.0	r=.73 p=.02*	r=-.57 p=.08*
Approp. Play Combinations		1.0	r=.03 p=.93	r=-.02 p= .96
Inapprop. Play Combinations			1.0	r=-.56 p=.06*
Non-semantic Combinations				1.0

As can be seen, MLU was positively related to play combinations with inappropriate objects, and unrelated to play combinations with appropriate objects. As noted before, this result was expected and replicates earlier work. What it seems to suggest is that there is something very special about the imposition of symbolic or pretend meaning on to arbitrary material such as vocal noises (words) or objects that bear very little resemblance to those commonly used for specific actions. Both language and play with inappropriate objects involve an imposition of meaning onto arbitrary material.

One can also see that the non-semantic play combinations were <u>negatively</u> related to both MLU and inappropriate play combinations. This was a surprising and unexpected result. If this preliminary result holds up with the rest of the sample, one might conclude that there are some important differences between symbolic combinations and those which do not involve meaning. In both symbolic play and language, there is a good deal of world-knowledge support for making sequences. Language and symbolic play both represent events and relationships in the real world which follow familiar patterns or scripts. The non-semantic task does not follow any familiar script. Children who are good at arbitrary sequences may not be attuned to

recognizing and reproducing familiar sequences which could support their representation of these in language and symbolic play.

In conclusion, I would like to suggest that this approach to developmental transitions has general utility, that is, looking for shared competences by examining relationships between abilities in different domains.

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EPILOGUE

The work reported at the meetings of the Rocky Mountain Psychological Association was, as noted, preliminary in nature. The results with the entire sample of 30 children were similar, but warranted somewhat different conclusions.

To review, a number of measures of children's multi-word use were calculated, as well as measures of the complexity of children's action combinations in symbolic play with appropriate and inappropriate objects. A similar measure of action complexity was applied to children's imitations of a series of nonsense actions.

In addition to these measures, which were previously described, a blockbuilding task had been administered to the children, on the lines of Case & Khanna (1981). In this task, four block structures were modelled for the children to copy. See Figure 1 below. The children were unable to complete structures C and D, but spontaneously produced structures E and F. Structures A, E, F, and B formed a reliable Guttman scale (coefficient of scalability = .6571, coefficient of reproducibility = .9333). This block scale, that is, the number of different block structures created by the child, was entered into further analyses.

To summarize, the investigation focussed on combinatorial activities in five tasks: language, appropriate symbolic play, inappropriate symbolic play, nonsense actions, and blocks.

No correlation was found between multi-word use and combinatorial abilities in symbolic play with appropriate objects. The total number of multi-word utterances was, however, related to action combinations in symbolic play with inappropriate

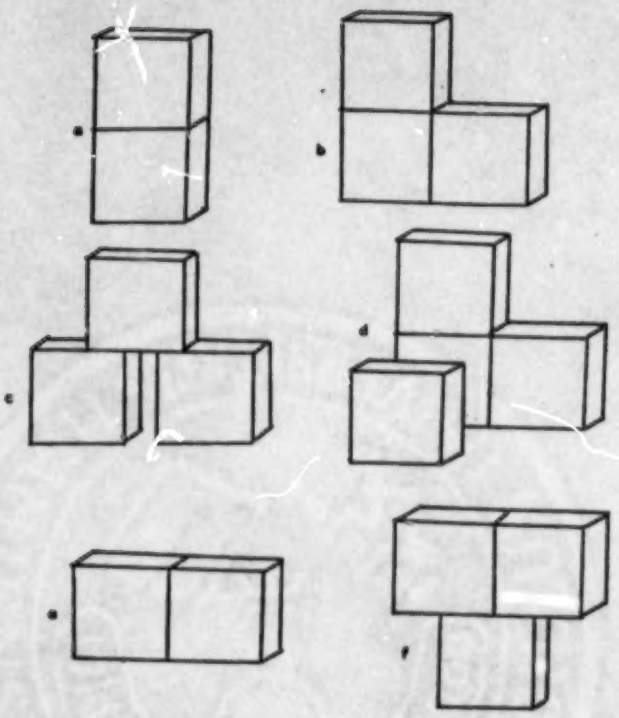

Figure 1. Block Structures. A through C were used by Case & Khanna, 1981. A through D were modelled by experimenter in the present study. E and F were produced by subjects spontaneously.

objects (Kendall's tau (28) = .22, $p<.09$). Total multi-word utterances was also related to the block scale (Kendall's tau (28) = .23, $p<.08$). The negative correlation between language variables and the nonsense action combinations which had appeared in preliminary analyses turned out to be based on one or two unusual individuals: none of the nonparametric correlations between these tasks were significant. Language combinations, then, were related to symbolic play with inappropriate objects and to block building.

The two tasks which were unrelated to language, symbolic play with appropriate objects and nonsense actions, were related to one another (Kendall's tau (27) = .42, $p < .002$.)

These results require a reconsideration of the previous conclusions based on preliminary data. The relationship between language combinations and blockbuilding suggests that meaningfulness or semanticity as such is not likely to be the key to onset of early multi-word utterances.

The similarity between symbolic play with appropriate objects and nonsense actions may lie in the observation that such sequences of action are almost habitual with children of this age. Given a ring and a stick, it is almost inevitable that they will put the stick in the ring. The other nonsense actions employed in this study, banging the block on the ring and spinning the ring, were of a similar nature. The symbolic play action sequences with realistic objects were also of the sort that the child might not have to consider before carrying out--if there is a car and a small doll, it is pretty likely that children of this age will put the doll in the car and drive the car.

On the other hand, word combinations, symbolic play with inappropriate objects, and block structures require a little more concentration and consideration. This distinction between considered combinations and unconsidered ones is similar to one found in adult cognitive literature which contrasts "automatic" and "controlled" processing. Twenty-month-olds who are just beginning to make sentences seem to have to pay attention to planning them, while later on in language development, the ability to put words together presumably becomes more habitual. Tasks which assess "automatic" vs. "controlled" processing could be

useful in correlational studies as indicators of the frontiers of language development.

ADDITIONAL REFERENCES

Case, R. & Khanna, F. The missing links: Stages in children's progression from sensorimotor to logical thought. In W. Fischer (Ed), New directions for child development. San Francisco: Jossey Bass, 1981.